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NOTICES FROM THE LICK OBSERVATORY.

PREPARED BY MEMBERS OF THE STAFF.

ON THE ROTATION TIME OF THE PLANET *VENUS* [BY PROFESSOR
G. V. SCHIAPARELLI].

Professor SCHIAPARELLI has printed in the *Rendiconti* of the *Royal Lombardic Institute* a series of five articles entitled "Considerations on the Rotation of the planet *Venus*." In the last of these notes the conclusions arrived at are summarized in a series of theses, somewhat as follows :

"1. The rotation of *Venus* is exceedingly slow, and takes place in such a way that the situations of the markings on its surface, with respect to the position of the terminator between the illuminated and the dark portion of the planet, do not seem to suffer any appreciable change even in the duration of an entire month.

"2. From the few definite observations of these markings which it has been possible to collect, the most probable result is that the planet makes one rotation in 224.7 days,—that is to say, in a period exactly equal to the duration of its sidereal revolution about the sun ; and that this rotation takes place about an axis almost exactly perpendicular to the plane of the orbit.

"3. The possibility of a certain variation of the true elements of rotation from those above given, is not entirely excluded by the observations. Such variations might attain, so far as the time of rotation is concerned, values of some weeks more or less, so that, strictly speaking, a period not less than six months and not more than nine might reconcile the data. As to the direction of the axis, a deviation of ten or fifteen degrees from the perpendicular to the orbit is still possible.

"4. A rotation period of approximately twenty-four hours, more or less, is entirely excluded. The observations of DOMENICO CASSINI agree better with a period of 224.7 days than with one of twenty-four hours ; the rotation time of $23^{\text{h}} 21^{\text{m}}$ (or 22^{m}) proposed by JACOPO CASSINI, which SCHROETER and DE VICO considered to be confirmed by their observations, is the result of a series of fallacious arguments, and of vicious circles of reasoning.

"5. The rapid variations in the aspect of the planet (and specially in the horns of its crescent), which have been frequently noticed

to repeat themselves in a period of about twenty-four hours cannot be adduced to support the hypothesis of a rotation of about one day. Such variations arise from atmospheric causes, which tend to repeat themselves in a daily period.

"6. BIANCHINI'S observations were made on markings which were too poorly defined to give satisfactory results, and the alterations of aspect which he attributed to rotation were due to changes in the atmosphere of the planet itself.

"7. In the more southern regions of the planet there sometimes occur formations of markings, rather well-defined, clear and dark, which (so far as could be judged from the little which was seen of them) seem to reappear from time to time under identical aspects, and would thus lead us to suppose a relation of such phenomena with forces having fixed situations on the surface of *Venus*. Continuous and diligent observations of these appearances made with instruments adapted to the purpose would probably give an exact and definitive solution to the problem of the rotation of *Venus*.

"8. Important, likewise, is the study of certain very small markings, bright, spherical and well-defined, surrounded, or sometimes flanked, by intense shadow, and often coupled two by two, which appear in various parts of the planet, specially, near the terminator, and are wont to last a few days." E. S. H.

OBSERVATIONS OF SMALL SPOTS ON *JUPITER*.

Observing *Jupiter* on the morning of April 27th of this year, some rather singular black spots were seen just within the north edge of the north equatorial band. These were exactly like shadows of satellites, for which they were at first mistaken.

I recorded, "the two small spots are inky black, and seem very slightly elliptical." The seeing was excellent. Three of these peculiar spots were visible near transit when the great Red Spot was central, and, later, a fourth made its appearance at the following limb. The preceding one of the three first seen was considerably smaller than the others, and the observations refer to the two conspicuous ones,—*i. e.*, the second and third of April 27.

I have numbered these small spots 1, 2, 3, etc., in the order of increasing longitude, beginning with the preceding one of the two near the Red Spot.